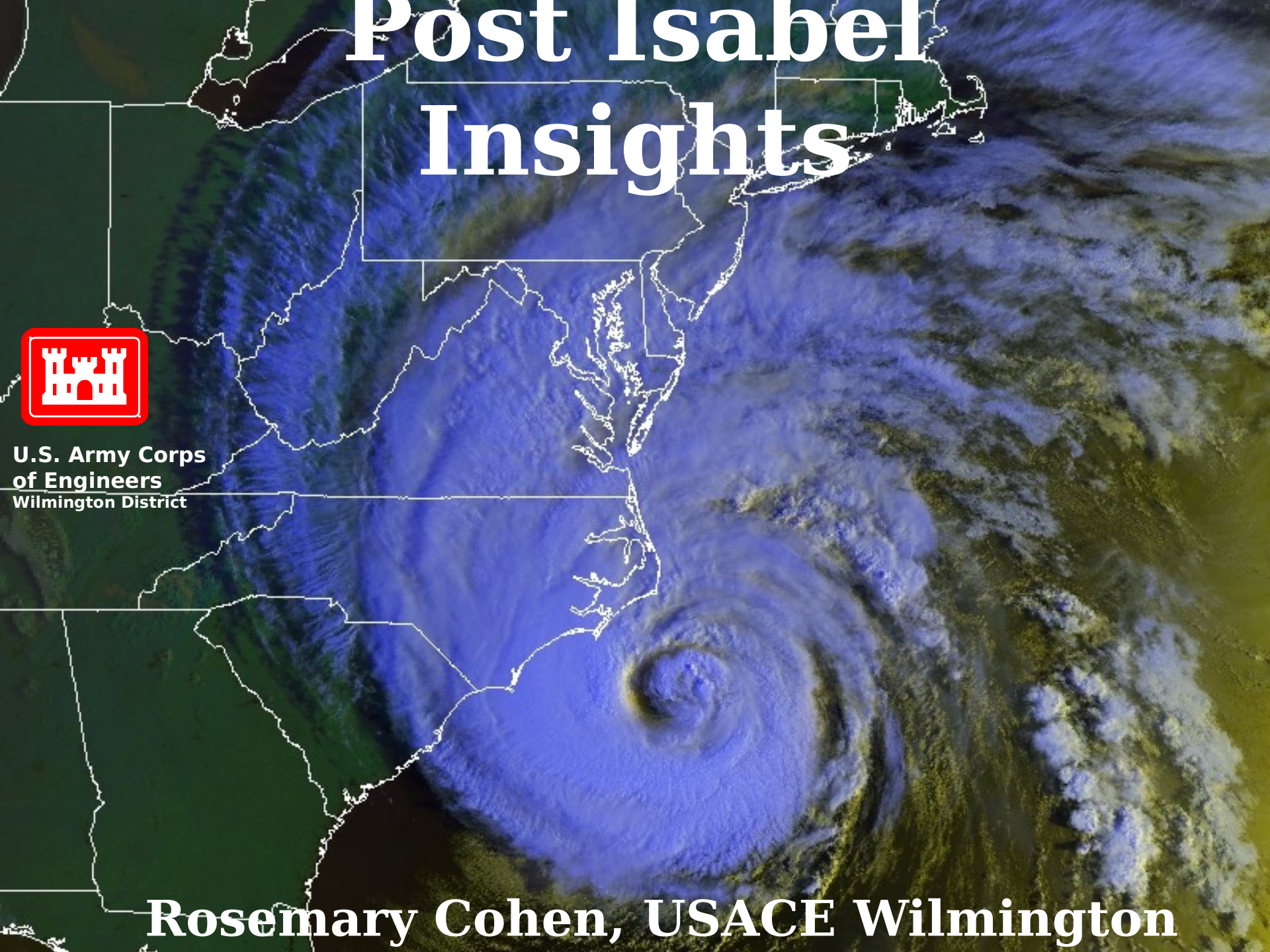
Post Isabel Insights



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Rosemary Cohen, USACE Wilmington

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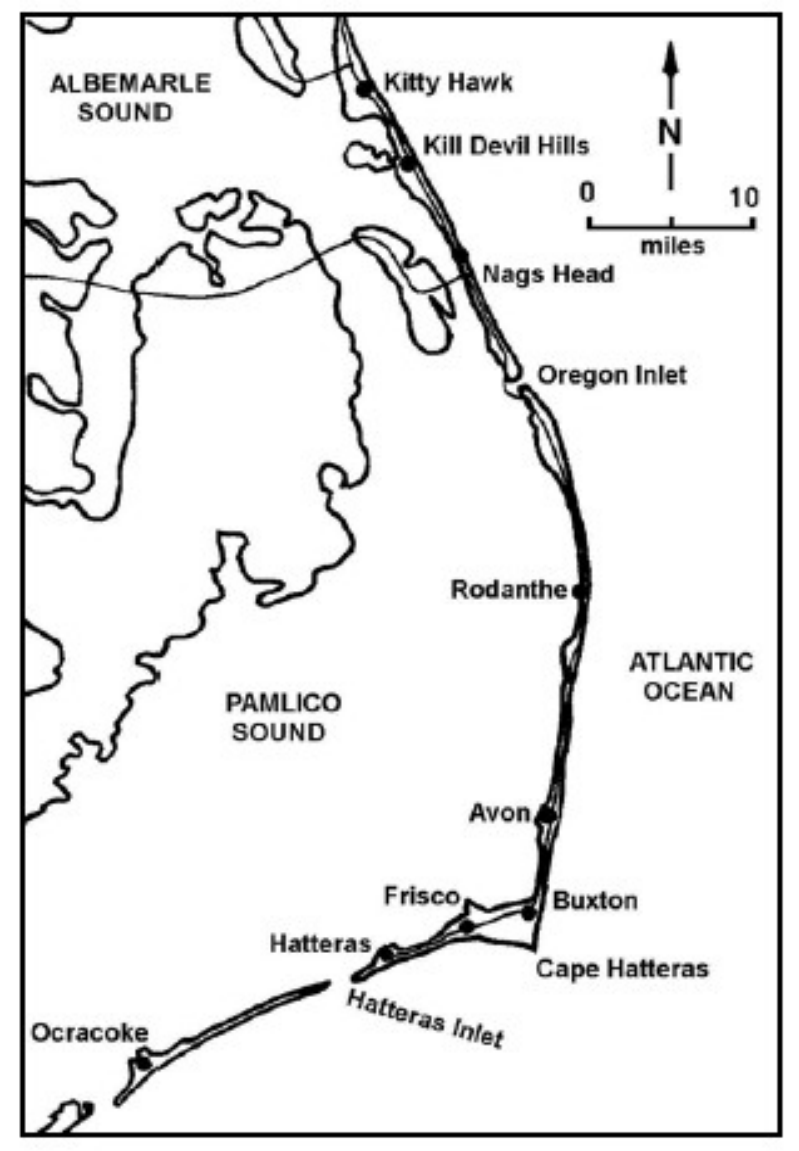
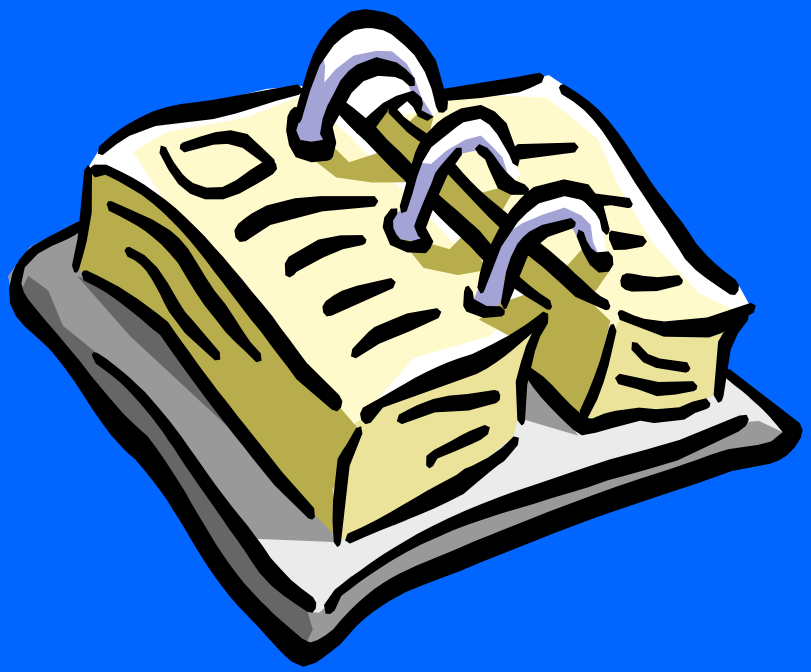


Site map of the North Carolina Outer Banks

Isabel Damages

Isabel Damages

Data Sources



- FEMA
- Municipalities
- USACE Surveying
- LIDAR

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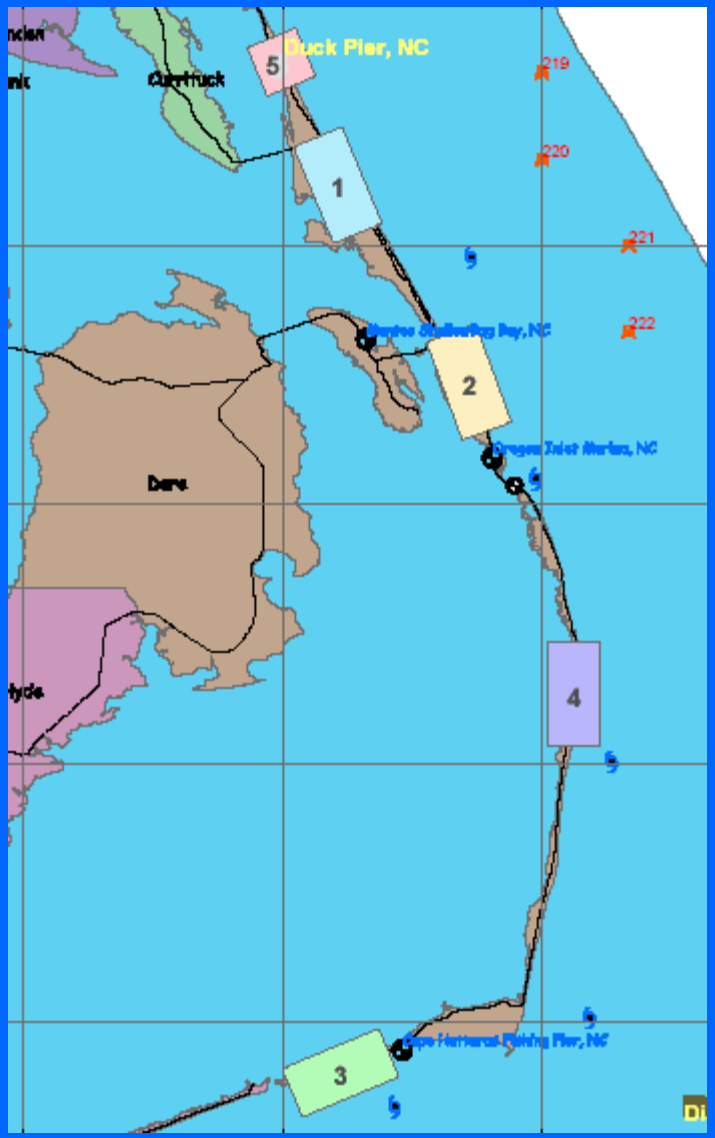
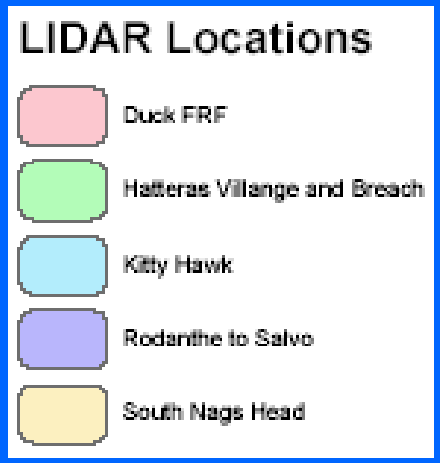


LIDAR data requested from USGS



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Beach Structure Types

Older piling supported structure in Kitty Hawk.

Newer piling supported structure type full enclosure in Hatteras Village.

Photos courtesy of Spencer Rogers

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Piling Length Importance

Photos courtesy of Spencer

- **pilings will extend to floor of second finished story.**

- **central pilings will extend to lowest finished story.**

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Beach Mansion

Rents for as much as $45,000 per week in peak season, 16 bedrooms

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Sample of contents

Typical Ground Level Features of Beach Structures

Parking space with concrete slab
Concrete slabs reinforced with steel $9.00/SF
Garage doors
Storage and locked owner's closets
Entry foyers with expensive doors and staircases
Decking and footings for upper decks
Elevator equipment
Septic tanks and drain fields (or self-contained)
Sprinkler systems
Swimming pools
Privacy fences and gates
Lawn and deck furniture
Hot tubs and Jacuzzis
Outdoor showers
Picnic tables
Garden and yard tools and lawnmowers
Outdoor courts (basketball, shuffle board, or volleyball)
Washers and Dryers
Refrigerators and freezers
Electronics: TVs, stereos, home theaters, VCRs, DVD players, telephones,
answering machines, computers, printers, etc.
Laundry rooms or mud rooms
HVAC equipment
Water heaters
Water softeners and filters
Gas grills
Propane tanks for grill or fireplace logs
Bedrooms
Bathrooms
Kitchenettes or wet bars
Recreation rooms with pool tables and other game tables
Carpets, rugs, fans, and furniture
Kayaks and jet skis
Gear for fishing, skiing, surfing
Shrubbery, sodded lawns, mulched and graveled areas

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Typical Ground Level Damages to Modern Beach Mansions

DAMAGE	REPAIR COST
Building damage	$100,000
Engineered slab	25,000
Peat septic system	28,000
General contents	15,000
Landscaping	5,000
Decking, footings and stairs	20,000
Outside hot tub	5,000
Elevator	18,000

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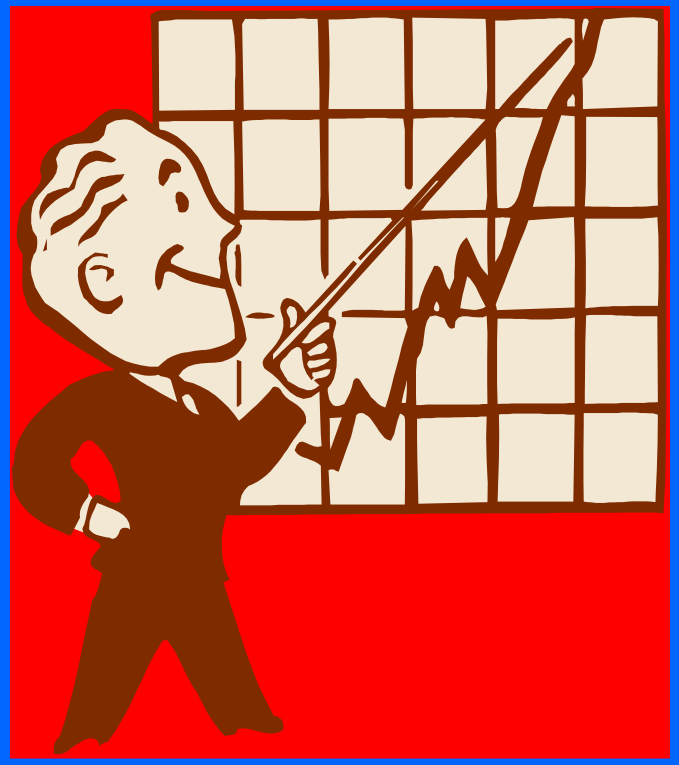
Results



- Storm damage relationships
- GRANDUC calibration
- BECKY development